

Oracle Dome Camera Installation Manual





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Whilst every attempt is made to ensure these manuals are accurate and current, Dedicated Micros reserve the right to alter or modify the specification of the machine described herein without prejudice.

Introduction

Congratulations on choosing a Dedicated Micros Oracle dome camera.

This manual will provide all the necessary information to install the Dedicated Micros Oracle Dome Camera.

RF Interference warning

This is a class A product. In a domestic environment this product may cause radio frequency interference, in which case the user may be required to take adequate measures.

Product Safety

WARNING

- Installation and servicing is only to be carried out by suitably qualified and experienced personnel and should conform to all local codes.
- Only power low voltage cameras from the provided power supply. Use only a Class 2 power supply with a maximum current of 1.5 amps and the wiring as specified in the National Electrical Code ANSI/NFPA 70.

This camera range is designed for use in general purpose CCTV applications and has no other purpose.

Only operate your camera between the temperatures of -10°C and +40°C. This low voltage camera must be powered with either a 12V DC or a 24V AC power supply. Do not operate your camera outside its specified power supply range.

FCC CLASS B REGULATORY NOTICE

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a different circuit different to the receiver.

Consult the dealer or an experienced radio/TV technician for help.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.

Camera Care

In order to avoid damaging your camera, note the following points:

CAUTION

- Remove all packaging inserts and the protective film from the dome cover before using the camera.
- This installation should be made by a qualified service person and should conform to all local codes.

CE NOTICE (EUROPEAN UNION).

Marking by the symbol CE indicates compliance of this DM product to the Electromagnetic Compatibility Directive 89/336/EEC, and the Low Voltage Directive 73/23/EEC of the European Union. Such marking is indicative that this system meets the following technical standards.

- EN 61000-6-3 EMC Standard Residential, Commercial and Light Industry.
- EN 61000-3-3 Limitations of voltage changes, fluctuations and flicker in public lowvoltage supply systems for equipment with rated current up to 16A.
- EN 61000-3-2 Limits for harmonic current emissions for equipment with rated current up to 16A.
- EN 50130-4 Immunity requirements for components of fire, intruder and social alarm systems.
- EN 60950 Safety of IT and related equipment.
- EN 55022 Class B. Radiated Emissions Standard, suitable for Commercial or Residential use.
 - EN 60825-1 Safety standard for LED's and Lasers.

Further details about these applicable standards can be obtained from Dedicated Micros Ltd. 1200 Daresbury Park, Daresbury, Cheshire, WA44HS.

A "Declaration of Conformity" with all relevant European Union Directives has been made, is on file and is available from the Dedicated Micros address above.

CE

This product is marked with the CE symbol and indicates compliance with all applicable directives.

Directive 89/336/EEC.

A "Declaration of Conformity" is held at Dedicated Micros Ltd., 1200 Daresbury Park, Daresbury, Cheshire, WA44HS.



Components supplied - External

Before installing the dome, please remove the components from the packaging and verify that all items listed below have been supplied:

- 1 x Dedicated Micros Oracle Dome enclosure and camera (with incorporated safety bond)
- 1 x Oracle Dome Power Supply (except USA)
- 1 x Dedicated Micros Oracle Dome manual

Note for US Customers: The PSU must be a UL2044 approved Class 2 current limited 24VAC Power Supply with a maximum current of 1.5 amps and the wiring as specified in the National Electrical Code ANSI/NFPA 70.

- Note: Mounting brackets may have been ordered and delivered separately.
- Important: The Advanced Programming and Control features on the Oracle Dome are only available when used with the latest Dedicated micros DVRs. These include DV-IP Server, DV-IP HD, DV-IP RT and HighVu Excel. Standard functionality will still be available with other control equipment.

Components supplied - Internal

Before installing the dome, please remove the components from the packaging and verify that all items listed below have been supplied:

- 1 x Dedicated Micros Oracle Dome enclosure and camera (with incorporated safety bond)
- 1 x Dedicated Micros Oracle Dome manual
- **Note:** The PSU must be a UL2044 approved Class 2 current limited 24VAC Power Supply with a minimum current of 1.5 amps and the wiring as specified in the National Electrical Code ANSI/NFPA 70. Dedicated Micros recommends the DM/94012 for indoor dome.
- Note: Mounting brackets may have been ordered and delivered separately.
- Important: The Advanced Programming and Control features on the Oracle Dome are only available when used with the latest Dedicated micros DVRs. These include DV-IP Server, DV-IP HD, DV-IP RT and HighVu Excel. Standard functionality will still be available with other control equipment.

Electrical Connections - External

Multiway Connector

The dome receives power and data, and sends video and data via the multiway connector. This feeds into the PCB housed in the terminal box, which provides wiring breakout and interconnectivity.

Note: The terminal box is not supplied in the USA.

Dome connector



Note: Viewed from wiring side

The 15 core cable connections are as follows:

Cable	Function	Connector Pin
Green/Yellow	Earth	F
Green/Yellow	Earth	G
Coax	Video Signal	С
Coax	Vid Screen	Р
Yellow	RS485A	E
Green	RS485B	Т
Brown	24VAC	D
Blue	24VAC	U
Violet	Alarm 1	Н
Pink	Alarm 2	S
Grey	Alarm 3	J
Orange	Alarm 4	R
Black	Alarm Ground	К
White	Relay A	Ν
Red	Relay B	L



Minimum configuration

The simplest connection possible to the Oracle Dome would require the following;

The Mains supply (live, earth and neutral) is connected to the heavy duty connector block mounted in the Power Supply Unit next to the PCB. Power select links (J1 & J2) should be set to 24VAC (centre and arrowed pin bridged as shown above). Telemetry termination (TEL TERM) link is normally not fitted (as shown above).

Function	Colour	PCB Connector
Safety (Earth)	Green/Yellow	Shield Gnd
Power	Brown	PWR+
Power	Blue	PWR-
Video	Coax	BNC
RS485A	Yellow	Tx/Rx +A
RS485B	Green	Tx/Rx -B

Note: Whilst the Alarm and Relay inputs are not essential for minimum configuration, it is recommended that they are connected to the PCB in case they are required in the future.

Note: The Multiway cable should be securely clamped to the chassis using the screw clamp provided. The insulation should be stripped back to allow the clamp to contact the cable foil sheath. All glands into the PSU should be securely tightened to prevent the ingress of moisture.

Connecting the DVR to the Oracle Dome (via PCB)

Video to the DVR is sent via the BNC Video/Control Output connection shown above.

Telemetry control is via the DVR RS485 Telemetry Inputs/Outputs connection shown above.

RS485A connects to Pin 1 on the serial connector of the DVR.

RS485B connects to Pin 9 on the serial connector of the DVR.

Alternatively the Oracle supports either up the coax (UTC) control via the video output BNC connector or un-shielded twisted pair (UTP) via the UTP video/UTP net connectors (available via future software upgrade).

Electrical Connections - Internal

The dome requires connection to the power supply and to the BNC connection of the DVR. Use the serial port connection if serial telemetry is required. There is no prepared cable included, the connector for the camera is included.



The two RJ45 connectors are used for alarms and UTP control. The serial connector provides the serial telemetry interface. The dome will also be capable of accepting future software upgrades via this serial connection. This will ensure the dome can be incorporated into any upgraded network.

RJ45	connectors
------	------------

Pin	Connection
1	Alarm 1
2	Alarm 2
3	Alarm 3
4	Alarm 4
5	Alarm Ground
6	Not connected
7	Relay A
8	Relay B
Mater	The velocity of suitable few switching DC and your

Note: The relay is suitable for switching DC only and is rated at 0.7A.

Multiway connector

The serial connection is not required when using UTC Control.

Connector Fu	nction
24VAC	24VAC+ from UL2044 approved Class 2 current limited 24VAC 1A
24VAC	24VAC- from UL2044 approved Class 2 current limited 24VAC 1A
485A	Pin 1 on Serial Connection to appropriate DVR
485B	Pin 9 on Serial Connector to appropriate DVR
Vid GND	BNC Earth (screen connection)
Vid Sig	BNC Signal (centre pin connection)
Note: Refer to 'Dome	Configuration' for a list of appropriate DVRs.

Mounting Configurations - External

With appropriate brackets this dome enclosure can be mounted in any of the orientations shown below.





- 1. Wall/Pendant Mount (order code DM/90002) giving pendant or wall mount options.
- 2. Extended Wall Mount (order code DM/90009) for more flexibility in wall mounting.
- 3. Corner Bracket (order code DM/90007) for mounting to corners of buildings in conjunction with DM/90002.
- 4. Snowdrop mount bracket (order code DM/90004) for mounting at the top of a pole or column.
- Pendant Mount (order code DM/90003 250mm; order code DM/90012 500mm; order code DM/90013 - 1000mm; order code DM/90014 - 1500mm) for roof or parapet mounting.

Safety Bond

The safety bond is designed to prevent damage to the dome if it is dropped during installation or maintenance. It should be connected between the mounting point on the dome and a suitable secure position, either on the bracket or within the ceiling void. Selection of this suitable point should consider that it will receive the full force of the dome should it be dropped.



For wall, pendant & snowdrop mounted domes;

1. Clip safety bond to the mounting bracket eyelet on flange of bracket to secure.

For standard ceiling mounted domes attach the supplied safety bond;

- Attach bond to a suitable secure position in the ceiling void.
- **Note:** Always support dome with bond prior to mating connector. The weight of dome should be supported by bond ensuring no stress is placed on centre connector at any time.

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Dome Mounting

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A. Secure & hang dome to bracket by attaching safety bond spring clip to eyelet. **Note:** Procedure is the same for all installations.

Note: Ceiling installation is made easier by removing an adjacent ceiling tile during installation.

- B. Lift dome to bracket flange ensuring head of screws (previously fitted cap head screw) pass through keyhole slots. Twist to locate.
- C. Mate the previously prepared central connector, *refer to 'Electrical Connections' for more information,* supplying power & control to dome (ensure power is off when connecting).
- D. Tighten 4 top mounting fixings with Hexagonal key supplied to secure.
- E. Secure any plastic covers or trim (wall/pendant installations only).

Mounting Configurations - Internal

With appropriate brackets this dome enclosure can be mounted in any of the orientations shown below.





- 1. Wall/Pendant Mount (order code DM/90002) giving pendant or wall mount options.
- Corner Bracket (order code DM/90007) for mounting to corners of buildings in conjunction with DM/90002.
- 3. Tile mount (order code DM/CSD/TMR) for suspended ceilings.
- 4. Snowdrop mount bracket (order code DM/90004) for mounting at the top of a pole or column.

Safety Bond

The safety bond is designed to prevent damage to the dome if it is dropped during installation or maintenance. It should be connected between the mounting point on the dome and a suitable secure position, either on the bracket or within the ceiling void. Selection of this suitable point should consider that it will receive the full force of the dome should it be dropped.



For wall, pendant & snowdrop mounted domes;

1. Clip safety bond to the mounting bracket eyelet on flange of bracket to secure.

For standard ceiling mounted domes attach the supplied safety bond;

- 1. Attach bond to a suitable secure position in the ceiling void.
- **Note:** Always support dome with bond prior to mating connector. The weight of dome should be supported by bond ensuring no stress is placed on centre connector at any time.

Dome Mounting

Pendant Mount



- A. Secure and hang dome to bracket by attaching safety bond spring clip to eyelet.
- B. Lift dome to bracket flange ensuring head of screws (previously fitted Cap head Screw) pass through keyhole slots. Twist to locate.
- C. Mate the previously prepared central connector, *refer to 'Electrical Connections' for more information,* supplying power & control to dome (ensure power is off when connecting).
- D. Tighten 4 top mounting fixings with Hexagonal key supplied to secure.
- E. Secure any plastic covers or trim (wall/pendant installations only).

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Tile Mount



- A. Remove the selected tile that will have the dome mounted in it. Use the mounting ring (B) as a template to mark the drilling positions of the 3 x supporting holes on a 204mm pitch circle diameter (6mmØ holes, if using the supplied cavity plugs (A)) and the 190mmØ hole for the dome. Fit the cavity plugs (A) to the holes.
- **Note:** The installer is responsible for ensuring the fixings used to mount the dome are suitable for the material and will adequately support the weight of the dome.
 - B. Attach the mounting ring to the dome using the provided 6 x M3x8 fixings (C).
 - C. Re-install the tile in the ceiling. Secure and hang dome to a suitable mounting point in the ceiling void by attaching safety bond spring clip to eyelet through the large centre hole in the tile.
- Note: Ceiling installation is made easier by removing an adjacent ceiling tile during installation.
 - D. Fasten the dome to the mounting ring (B) using the provided 3 x No.8x1"(25.4mm) self tapping screws (D) (or suitable fixings provided by the installer).
 - E. Snap fit the provided tile mount bezel (E). This replaces the standard bezel (F) provided with the camera. Discard the standard bezel (F).

Control Configuration - All Models

Switch settings

Different controllers require different protocols and a red rotary switch is provided to select the desired protocol. These are accessed by removing the outer hemisphere, refer to 'Switch Configuration' for more information. There are three color coded switches, red, blue and yellow, which are all located inside the dome camera housing. The blue and yellow switches have different functions, depending on the protocol selected by the red switch.



Switch Configuration

To access the address switches and termination switch, remove the outer hemisphere by unscrewing the six hemisphere securing screws. The location of the switches is shown. Access to the switches is improved if the inner shroud is removed by taking out the four securing screws. This operation should be carried out in an office type environment to avoid ingress of moist air.

RED SWITCH LOCATION

Function - Protocol Selection

Position	Protocol
0	Auto Sense (under development)
1	DM UTC (under development)

- 2 **DM RS485**
- 3
- DM Current Loop (under development) 4 **BBV UTC**



Note: The selected protocol will be displayed on screen at power-up for a few seconds each time the rotary switches are changed.

BLUE SWITCH LOCATION

Function - Dependant on Red Switch Configuration

UTC/Current Loop - Not Used

Serial

- Referenced by Camera Number on the DVR, refer to 'Address chart' in section 'RS485 Serial Connection'.



YELLOW SWITCH LOCATION

Function - Dependant on Red Switch Configuration

UTC/Current Loop Serial - Not Used

- Referenced by Camera Number on the DVR, refer to 'Address chart' in section 'RS485 Serial Connection'.



TERMINATION SWITCH LOCATION (SW1)



Note: SW1 should be set towards the centre of PCB to turn RS485 termination ON or set away from the centre of the PCB to turn RS485 termination OFF.

RS485/CURRENT LOOP TELEMETRY SWITCH LOCATION (SW2)



Note: SW2 should be set towards the centre of the PCB (RS485)

COAX OR DIFFERENTIAL VIDEO SWITCH LOCATION (SW3)





RS485 Serial Connection

The coax cable and power wires are always connected.

The RS485 wires are only connected when an RS485 controller is being used.

The dome supports the DM RS485 PTZ protocols. The desired protocol and the node address for the dome are selected by the rotary hex switches (red, blue and yellow) inside the dome. These are accessed by removing the outer hemisphere and inner shroud, refer to Switch Configuration for more information.

RS485 protocol allows multiple domes to be connected via the serial connection on the back of the DVR. Each dome in the chain should have a unique individual address, to enable it to be called by the DVR. The switch settings for the protocols and node addresses are shown in the table below.

Address chart

Yellow

	Tenc																
		0	1	2	3	4	5	6	7	8	9	Α	В	С	D	Е	F
е	0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
١u	1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
В	2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
	3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
	4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
	5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
	6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
	7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
	8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
	9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
	Α	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
	В	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
	С	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
	D	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
	Ε	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
	F	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

To configure the Dome using DM RS485;

- 1. Select DM RS485 by setting the red switch to position 2.
- 2. Select a node address for the dome to be configured. Scan across the table to identify the values for the blue and yellow switches; blue switch setting is shown on the left, yellow switch setting on the right. For example, if the dome is to be used with node address ID#5 the switches should be set to '05'. i.e. the blue switch should be set to '0' and the yellow switch set to '5'.
- 3. Set the individual RS485 address for the dome on the blue and yellow switches fitted inside the dome housing.
- **Note:** The dome will display its protocol and address setting when first powered on as the screen will show (in the example above) "Node Address 05". It will also display briefly after each time the setting is changed.



All Dedicated Micros Oracle domes are fitted with a termination switch (SW1), shown above. If a single dome is connected on the RS485 line, or if a star configuration is used, the termination switch should be switched to 'ON' (Switch towards the centre of the PCB).

If multiple domes are connected in a 'daisy chain' configuration, then only the last dome in the chain should be switched to 'IN'. All other domes in the chain should be switched to "OFF' (Switch set away from the centre of the PCB).

Up-The-Coax PTZ control

Note: Only basic PTZ and preset functionality is available currently using UTC control. For full programming and control including **point**&go and Absolute Positioning use RS485 control.

Commands to control the position of the dome can be transmitted up the same co-ax cable used to transmit the video signal to the recorder station. Individual addresses do not need to be configured within the dome because the instruction is sent directly to the dome.

Note: The serial connection is not required when using Up-The-Coax control.

Up the Coax Switch Settings

Switch	Setting
Red	4
Yellow/Blue	Not required.

RED SWITCH LOCATION



BLUE SWITCH LOCATION



YELLOW SWITCH LOCATION



Upgrading Dome Software

The Oracle dome has an expanded feature and control set over other domes, which are only available through the Dedicated Micros PTZ protocol.

These features are accessed through a set of web pages available on the latest Dedicated Micros machines (DV-IP Server, DV-IP RT, DV-IP HD and HighVu Excel) and that will have access to this dome. These pages will be available through the familiar unit interface and will allow easy configuration of the domes features.

To upgrade dome software via RS485;

Note: The dome must be configured to RS485 telemetry to perform the software upgrade (Red Switch to position 2).

Software is downloaded via the RS485 telemetry link on the dome, using a USB to RS485 converter on the PC.

- 1. Download the software 'domecfg' and the application upgrade software from the Dedicated Micros website.
- 2. Connect a USB to 485 converter to a USB port on your PC (see note below for details of pin out for 9way Dtype connector).
- 3. Connect the RS485 serial lead from the Oracle dome to the output of the USB to 485 converter.
- 4. Launch the 'Domecfg' application.
- Select 'Setup' (tab top left of window) in ComPorts window select drop-down menu and select the PC COM port that has been assigned to the USB to RS485 converter.
- 7. Ensure the following settings are selected:

Baud rates:	9600	
Parity:	None	
Data bits:	8	
Stop bits:	1	
Flow control:	Xon char	17
	Xoff char	19

- 8. Select 'OK'
- 9. Select the Camera number (Cam box top left window) to ensure the upgrade program addresses the packets to the relevant dome.
- Confirm that correct COM port has been selected by using the Up (U), Down (D), Left (L) and Right (R) buttons to move the dome. If settings are correct the dome should move when requested. If not, check; The camera number equates to the dome address switch settings and that the USB to RS485 converter is correctly configured.
- 11. Select 'File->Open' and navigate to the downloaded application upgrade software zip file. Left click the file and then press 'Open'.
- 12. Select 'Upload' to transfer the file to the dome. Upgrade takes approximately twenty minutes, the progress can be monitored using the 'Domecfg' application or by viewing the camera that is being upgraded via the unit it is connected to.

Important: The dome must not be powered down whilst a software download is in progress. Powering down the dome could permanently corrupt the dome software.

- 13. When the upgrade is complete, the 'Domecfg' application will display 'Finished'.
- 14. Disconnect the RS485 telemetry cable from the USB to 485 converter and reconnect to the serial port of the DVR.
- 15. Confirm correct operation using telemetry control of the DVR

- **Note:** Pin out for 9-way D-type connector to the DVR is normally Pin 1 for RS485+A and pin 9 for RS485B. If the converter used is different then an intermediate cable may be needed to transpose the wires (see converter's documentation for pin out details).
 - 16. Confirm the upgrade has been successful by checking the software version number on the startup screen (This screen can also be displayed by special preset G4)

Dome Configuration

The Dome is configured via the attached DVR. The special software features are available via the interface on DVR's capable of accessing them (DV-IP Server, DV-IP RT, DV-IP HD and HighVu Excel), refer to the documentation for your individual DVR for further details.

The Dome has advanced features that include Point and Go, Privacy masking, Presets, Sectors and Patrols. along with Camera and Event settings. Some of these will be available to standard DVR's.

List of DVR's required to utilise advanced programming features

DV-IP Server, DV-IP HD, DV-IP RT and HighVu Excel running Gen3 pages.

Note: Standard functionality will still be available with all other control equipment.

Troubleshooting

No picture

Cause

- 1. Check the Input voltage
- 2. Check the continuity on the dome cable, refer to 'Electrical Connections' for more information.

Picture with intermittent control

Cause

This is most likely due to too much or too little video gain whilst using UTC telemetry.

Solution

Adjust using the Oracle dome settings page on the DVR.

Dome spins continuously (DM controllers)

Cause

No joystick dead band recognized as joystick was off centre during power-up.

Solution

Reboot the controller with the joystick self centred.

No telemetry control

Cause

Check the telemetry and address switch settings.

Note: Any changes to the switch settings are briefly displayed on the video output from the dome as confirmation.

Notes

Oracle

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